

What is claimed is:

5 1. A method for producing a target substance
utilizing a microorganism comprising the steps of
culturing the microorganism in a medium to produce and
accumulate the target substance in the medium and
collecting the target substance, wherein the
microorganism is constructed from a parent strain of the
microorganism having a respiratory chain pathway of high
energy efficiency and a respiratory chain pathway of low
10 energy efficiency as respiratory chain pathways, and the
microorganism is a mutant strain or a genetic
recombinant strain having either one or both of the
following characteristics:

15 (A) the respiratory chain pathway of high energy
efficiency is enhanced,

(B) the respiratory chain pathway of low energy
efficiency is deficient.

20 2. The method for producing a target substance
according to claim 1, wherein the respiratory chain
pathway of high energy efficiency is enhanced by
increasing a copy number of a gene coding for an enzyme
involved in the respiratory chain or modification of an
expression regulatory sequence of the gene.

25 3. The method for producing a target substance
according to claim 1 or 2, wherein the respiratory chain
pathway of low energy efficiency is made deficient by
disruption of a gene coding for an enzyme involved in

0989488170501

the respiratory chain.

4. The method for producing a target substance according to any one of claims 1-3, wherein enzymes of the respiratory chain of high energy efficiency include SoxM type oxidase, bcl complex, NDH-1 or two or three kinds of them.

5. The method for producing a target substance according to any one of claims 1-4, wherein enzymes of the respiratory chain of low energy efficiency include cytochrome bd type oxidase, NDH-II or both of them.

6. The method for producing a target substance according to any one of claims 1-5, wherein activity of SoxM type oxidase is enhanced and NDH-II is made deficient in the microorganism.

7. The method for producing a target substance according to any one of claims 1-6, wherein the SoxM type oxidase is cytochrome bo type oxidase.

8. The method for producing a target substance according to any one of Claims 1-7, wherein the microorganism is selected from the group consisting of bacterium belonging to the genus *Escherichia* and coryneform bacterium.

9. The method for producing a target substance according to any one of Claims 1-8, wherein the target substance is selected from the group consisting of L-amino acids and nucleic acids.

SWB

100-070501

100-070501